

CALIFORNIA INSTITUTE OF TECHNOLOGY  
PASADENA

DIVISION OF BIOLOGY  
KERCKHOFF LABORATORIES OF BIOLOGY

April 9, 1955

Dr. Rosalind Franklin  
Birkbeck College Crystallography Laboratory  
21 Torrington Square, W.C. 1  
London, England

Dear Dr. Franklin:

Jim tells me he has just written you, but he did not include the copy of the Fourier-Bessel Transform, so I am sending it along. The solid curve on the left is the  $16\text{\AA}$  resolution radial density distribution, calculated from my equatorial Gliger counter measurements. The broken curve is the  $10\text{\AA}$  resolution projection, obtained from photographic estimation of the intensities of the next four visible equatorial maxima. The reliability of these intensity estimates is not very good, but the signs and positions are definite, so the general shape of the projection at  $10\text{\AA}$  resolution should be as plotted. The radial effective mass distribution is plotted at the right. As soon as I get this written up, I'll send you a copy.

Jim has written about the use of lead binding to determine the signs - the same method may be used for non-equatorial

layer lines, since my photographs indicate some modification of the intensities for the 3rd layer line, as well as ~~some~~ perhaps some others. On the equatorial layer line I suspect the occurrence of four small amplitude maxima or minima, which could not be detected, in the angular range covered. The only one expected to be at all appreciable is an amplitude minimum(~~of~~) on the high angle side of the amplitude maximum at about  $20^\circ$  spacing (that is the sixth equatorial intensity maximum). This expected weak reflection appears in the pattern from the lead substituted TNY, since it is in phase with the lead contribution. You may have detected this weak reflection in your photographs.

I'd like to come to England for a few months toward the end of the summer to work with you - if I can get funds. Yale may pay for this, since I'll be returning there, and it would be a good idea to see you before planning a research program there. Geiger counter intensity measurements should be quite useful where large intensity ranges have to be covered, and for establishing the location of bound metals, so perhaps we could work together to get the cylindrical Fourier-Bessel projection of the sub-unit. I'll be back at Yale for the next two or three weeks, and will write you if this plan is possible.

Sincerely,  
Don Caspar